NOAA-N and –N’

MISSION OPERATIONS READINESS TEST PLAN

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Revision A

Prepared for
National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland

NOAA-N and –N'

MISSION OPERATIONS READINESS TEST PLAN

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CHANGE RECORD

CCR No.	Date	Section
1873	12/12/01	All
1994	05/29/03	All

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Section 1 - Introduction

The Polar Operational Environmental Satellites (POES) National Oceanic and Atmospheric Administration (NOAA) K, L, M, N, N' series of spacecraft are launched from Vandenberg Air Force Base (VAFB) and controlled from the NOAA Satellite Operations Control Center (SOCC) in Suitland, Maryland. These spacecraft are being developed and commissioned by the National Aeronautics and Space Administration (NASA) and will be operated on-orbit by National Environmental Satellite, Data, and Information Service (NESDIS).

The *NOAA-N and -N' Mission Operations Readiness Test Plan* addresses the mission readiness test and verification process and procedures that ensure that ground networks, data processing systems, and operational procedures have been properly developed, and integrated, and are ready to support the NOAA-N and -N' missions.

1.1 Purpose

The purpose of the *NOAA-N and -N' Mission Operations Readiness Test Plan* is to define the activities to be performed to verify NOAA SOCC ground system readiness to support the NOAA-N and –N' missions. This document provides the guidelines for validating the functionality and compatibility of the NOAA SOCC and the supporting ground system elements. This plan identifies and defines the roles and responsibilities of all participating organizations.

1.2 Scope

The scope of this document is limited to the mission readiness testing for the NOAA-N and -N' spacecraft.

1.3 Participating Organizations

The POES mission readiness effort requires support from NASA Goddard Space Flight Center (GSFC), Lockheed Martin Space Systems Company (LMSSC), and NOAA. These organizations provide systems engineering and technical support to define, develop, and execute all phases of mission readiness testing. The NASA and NOAA mission readiness team ensures that the resources required to execute the mission readiness tests are identified and in place. The following organizations will participate in the POES mission readiness effort:

- NASA GSFC POES Project Office
    - LMSSC
    - NASA POES Flight Operations Group

- NASA POES Software Engineering Group
- NASA Instrument Engineers
- NASA Subsystem Engineers

- NOAA NESDIS Office of Satellite Operations

  - SOCC Control Branch
  - SOCC Software Branch
  - SOCC Support Branch
  - SOCC Systems Engineering Group

1.4 Organizational Roles and Responsibilities

The NASA GSFC POES Project Office is responsible for overall management of the spacecraft development, mission readiness, spacecraft launch, and On-orbit Verification (OV).

1.4.1 Mission Operations Working Group

The NASA POES Flight Operations Manager (FOM) has chartered the joint NASA/NOAA Mission Operations Working Group (MOWG) to lead the systems engineering support for mission readiness, including ground system Integration and Test (I&T). The MOWG consists of both government and contractor support personnel from the NASA POES Flight Operations Group and the NOAA SOCC Systems Engineering Group. Its role includes the development of mission operations documentation, validation of ground and flight software, databases, and nominal and contingency operations procedures. Furthermore, this group will implement a ground system I&T program for NOAA-N and –N' to ensure that the overall flight and ground system are compatible, functional, and capable of supporting the NOAA-N and –N' missions.

1.4.1.1 NASA POES Flight Operations Group

The NASA POES Flight Operations Group is comprised of government and contractor support personnel, and is under the direction of the POES FOM at NASA GSFC. This team of system engineers is responsible for the development and implementation of mission operations documentation, database validation and certification processes and procedures, operations procedures, and the training and certification program for the NOAA-N and –N' missions. The NASA POES Flight Operations Group also supports the development and implementation of NOAA-N and –N' mission readiness tests.

1.4.1.2 NOAA SOCC Systems Engineering Group

The NOAA SOCC Systems Engineering Group is comprised of government and contractor support personnel and is under the direction of the NOAA Launch Readiness Manager at the NOAA SOCC.

This team is primarily responsible for providing systems engineering support to the operational polar orbiting spacecraft, which are operated from the NOAA SOCC. This team is also responsible for providing systems engineering support for the definition, development, and implementation of documentation, databases, ground system validation and certification, and operations procedures. The NOAA SOCC Systems Engineering Group also supports the development and implementation of NOAA-N and –N' mission readiness tests. This team provides database releases.

1.4.2 Interfacing Organizations

The following organizations interface with the MOWG in support of mission readiness testing:

1.4.2.1 POES Software Engineering Group

The POES Software Engineers provide:

- Flight software independent validation and verification
- Flight software deliveries
  - Test load package
  - Flight load package
-

1.4.2.2 POES Instrument Engineers

The POES Instrument Engineers provide technical support to the MOWG for the definition, development, and execution of mission readiness tests which will validate and certify ground system modifications, databases, and operational procedures for the NOAA-N and –N' science payload.

1.4.2.3 POES Subsystem Engineers

The POES Subsystem Engineers provide technical support to the MOWG for the definition, development, and execution of mission readiness tests. These tests will validate and certify ground system modifications, databases, and operational procedures for the NOAA-N and –N' spacecraft subsystems.

1.4.2.4 NOAA SOCC Software Branch

The SOCC Software Branch is responsible for SOCC ground system and communication network software upgrades, maintenance, and configuration management. A representative of the SOCC Software Branch is responsible for system maintenance and trouble-shooting in the event of software problems during mission readiness testing.

1.4.2.5 NOAA SOCC Support Branch

The SOCC Support Branch is responsible for the overall management of the SOCC ground system and communication network hardware. The SOCC Support Branch including the Equipment Maintenance Section provides support on an as-needed basis during mission readiness testing.

1.4.2.6 NOAA SOCC Control Branch

The NOAA SOCC Control Branch provides real-time ground configuration and operations support for the tests. The Flight Controllers are responsible for configuration and verification of ground equipment including voice lines, data lines, and Polar Acquisition and Control System (PACS) equipment.

1.4.2.7 LMSSC

The spacecraft contractor provides systems engineering support for the definition, development, and implementation of mission readiness tests involving the spacecraft and systems located at the LMSSC facilities. This support includes participation in the development and reviews of test plans, test scripts, and test reports. The spacecraft contractor also provides systems engineering support (via telecon) for End-to End (ETE) test planning meetings, script reviews, Test Readiness Reviews (TRRs), pre-test briefings, and post-test debriefings. The spacecraft contractor provides support for spacecraft power-up and configuration, health and safety monitoring, and trouble-shooting during each test involving the spacecraft.

1.5 Supporting Documentation

1.5.1 High Level Documentation

Detailed Mission Requirements (DMR) Document for the NOAA-K through N and N' Missions, S-480-104, latest revision

NOAA POES Database Development and Validation Plan and Procedures, LM-POES-001, latest revision

System Mission Operations Requirements Document, due at launch minus six months

1.5.2 Test Plans

McMurdo (MCM) Sound Station Interface Verification Test (IVT) Plan for NOAA- N and N', date TBD

U.S. Air Force Western Range (WR) NASA Telemetry Station (NASA TM) Interface Verification Test (IVT) Plan for NOAA- N and N', April 2003

Air Force Satellite Control Network (AFSCN) Interface Verification Test (IVT) Plan for NOAA-N and N' date TBD

Jet Propulsion Laboratory (JPL) Interface Verification Test (IVT) Plan for NOAA- N and N', date TBD

Tracking and Data Relay Satellite System (TDRSS) Interface Verification Test (IVT) Plan for NOAA- N and N', date TBD

Proficiency Test Plan for NOAA-, N and N', date TBD

NOAA-N and N' End-To-End Test Plan, September 2002

Hangar-AE Interface Verification Test (IVT) Plan for NOAA-N and N', draft

Section 2 - Testing Methodology

The POES ground system test and verification process ensures that all spacecraft and ground system elements are properly integrated and meet mission requirements. This is achieved through systematic validation of the spacecraft and ground system elements required to support the NOAA-N and –N' spacecraft.

All tests require a standard set of documentation, consisting of test plans, test procedures, test scripts, and test reports. Key personnel required to support the test from development through execution and reporting are identified; their roles and responsibilities are defined at a high level. A complete description of roles and responsibilities of key personnel can be found in the detailed test procedures for each test.

2.1 Mission Readiness Tests

This section describes the tests required to verify that the overall ground system is ready to support the NOAA-N and –N' missions.

2.1.1 SOCC IVTs

IVTs address the validation of the ground system interfaces to the NOAA SOCC. Interfaces between supporting elements of the ground system are verified through the use of data flows (commands, spacecraft telemetry, and science data) among all supporting elements and the NOAA SOCC.

Interfaces to SOCC are the JPL DSN, AFSCN RTS, WR, NASA Integrated Services Network (NISN), GSFC, MCM, the LMSSC Advanced TIROS-N Aerospace Ground Equipment (ATNAGE), TDRSS, Command and Data Acquisition (CDA) stations, and Kennedy Space Center (KSC) Hangar-AE (H-AE). Tests utilizing these interfaces validate the requirements and compatibility of interfaces between the NOAA SOCC and ground system elements external to the NOAA SOCC. IVTs include telemetry data flows from the DSN, AFSCN, WR, MCM, KSC and TDRSS to the NOAA SOCC, and command data flows from the NOAA SOCC to the DSN and MCM supporting elements.

The following interfaces are not due to undergo formal testing:

- GSFC
- LMSSC
- NISN
- CDA stations.

2.1.1.1 JPL DSN IVTs

Communications with the JPL DSN stations are verified through the transmission of commands from the NOAA SOCC to the DSN, and the transmission of telemetry from the JPL DSN to the NOAA SOCC.

Test Method

Recorded telemetry data from the NOAA-N or –N' Thermal Vacuum (TV) System Electrical Performance Evaluation Test (SEPET) are transmitted from the JPL DSN station to the NOAA SOCC, then ingested and processed via PACS. PACS then transmits the NOAA-N or –N' commands from the NOAA SOCC to JPL. The process is shown in Figure 2-1.

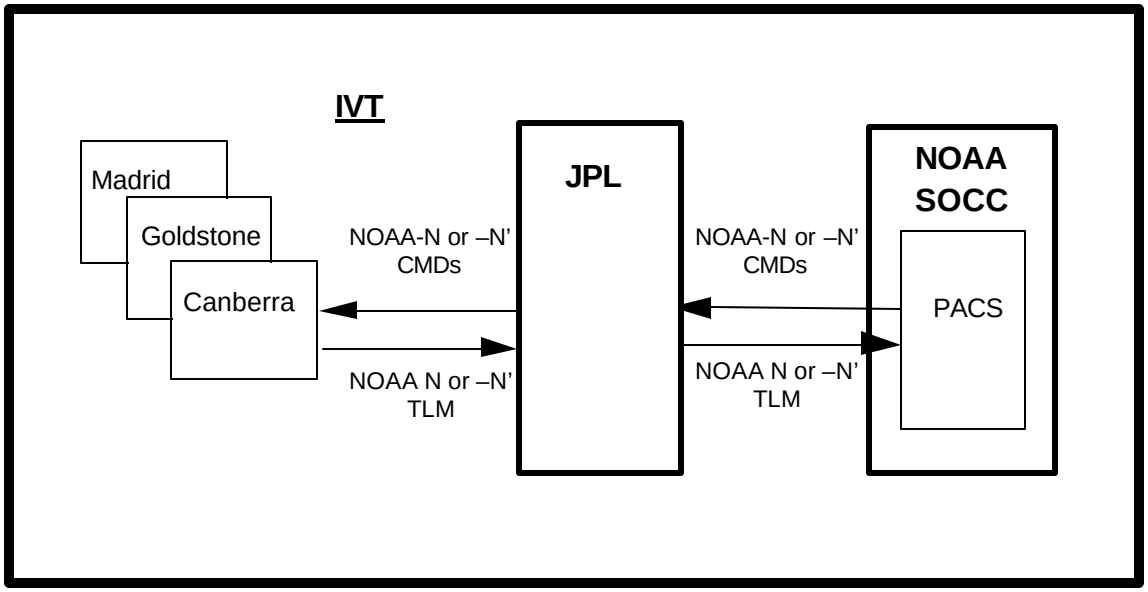

Figure 2-1 - PACS-JPL Interface Verification and Data Processing Test Flow

The following spacecraft I&T and ground system development activities must be completed prior to execution of the PACS-JPL interface testing:

- The NOAA-N or –N' telemetry database has been generated and is resident in the PACS Operational Data Base (ODB) directory at both the NOAA SOCC and Wallops CDA (WCDA) station.
- The NOAA-N or –N' TV SEPET has been completed and the Compact Disk-Read Only Memory (CD-ROM) converted to digital files and transmitted to JPL.

2.1.1.2 AFSCN IVTs

Interfaces among the AFSCN RTSs are verified through the transmission of telemetry from the AFSCN RTSs to the NOAA SOCC.

Test Method

Recorded telemetry data from the NOAA-N or –N' TV SEPET are transmitted from AFSCN to the NOAA SOCC, then ingested and processed via PACS, as shown in Figure 2-2.

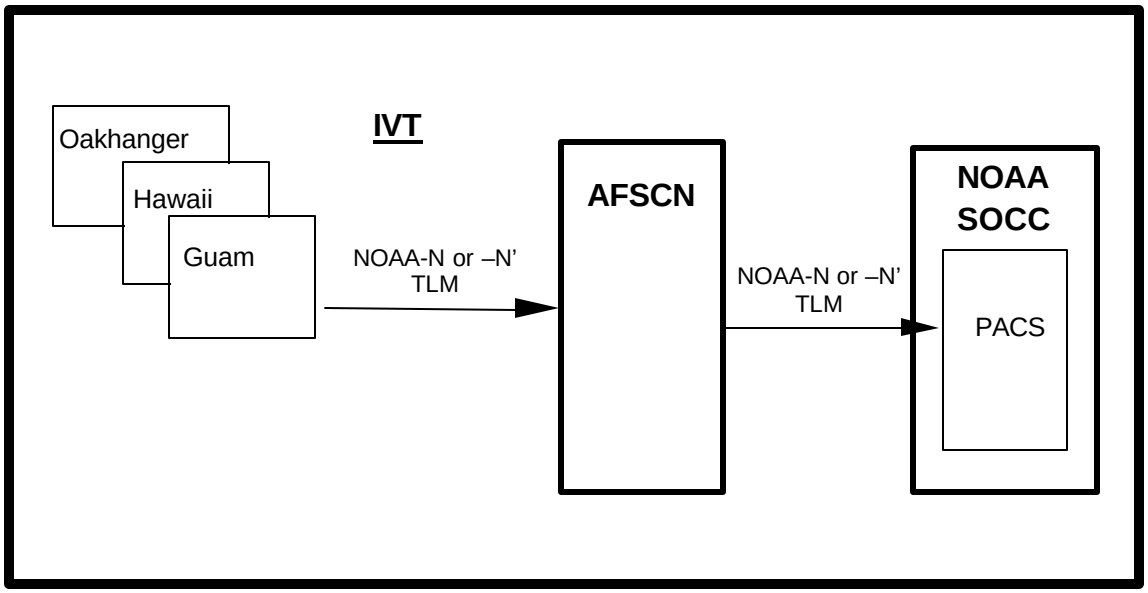

Figure 2-2 - PACS-AFSCN Interface Verification and Data Processing Test Flow

The following spacecraft I&T and ground system development activities must be completed prior to execution of the PACS-AFSCN Interface Test:

- The NOAA-N or –N' telemetry database has been generated and is resident in the PACS ODB directory at the NOAA SOCC.
- The NOAA-N or –N' TV SEPET has been completed and the CD-ROM converted to digital files and transmitted to AFSCN.

2.1.1.3 WR Interfaces

The NISN interfaces of the WR with NOAA SOCC are verified through telemetry data flows from the ATNAGE in VAFB Building 836 to the NOAA SOCC. The following activities must be completed prior to these data flows:

- The NOAA-N or –N' telemetry database has been generated and is resident in the PACS ODB directory at the NOAA SOCC.

- The NOAA-N or –N' TV SEPET has been completed and the CD-ROM converted to digital files and transmitted to WR.

2.1.1.4 MCM IVTs

NOAA SOCC, MCM, National Science Foundation (NSF), and NISN interfaces are verified through data flows of NOAA-N or –N' data files from the MCM to NOAA SOCC. The ability to transmit TIP ascent telemetry from MCM during NOAA-N or –N' launch support is also verified.

The MCM command capability (both the interfaces and the command echo timing) between NOAA SOCC and MCM is verified.

Test Method

- Verification of remote control capability

  This capability is verified through remote turn-on of data files for receipt at SOCC.

- Verification of Circuit Interfaces

  These interfaces are verified through data flows of NOAA-N or –N' data files from the MCM Station to NOAA SOCC, as shown in Figure 2-3. The telemetry data is sent in Internet Protocol format from the MCM station and flows, through NSF, NISN, and GSFC, to NOAA SOCC. At the same time, commands are transmitted from the NOAA SOCC via NISN and NSF to MCM. Command echoes are returned to SOCC from MCM.

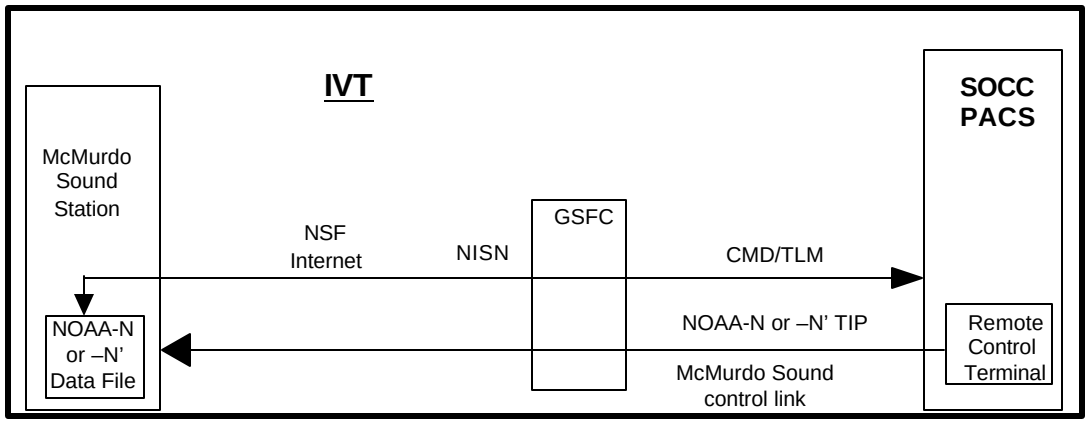

Figure 2-3 - SOCC-MCM Remote Control and IVT Flow

The following spacecraft I&T and ground system development activities must be completed prior to execution of the SOCC-MCM IVT:

- The NOAA-N or –N' telemetry database has been generated and is resident in the PACS ODB directory at both the NOAA SOCC and the WCDA station.

- The NOAA-N or –N' TV SEPET has been completed and the CD-ROM converted to digital files and transmitted to MCM.

- The NOAA-N or –N' data files must be installed at MCM.

2.1.1.5 TDRSS IVTs

The TDRSS IVT verifies the ability of the TDRSS and White Sands Complex (WSC) to relay NOAA-N and N' telemetry data to the NOAA SOCC via the data communication links between WSC, GSFC and WR. Testing also verifies the ability of the Space Network (SN) to provide tracking data to GSFC Flight Dynamics Facility (FDF).

Test Method

- Verification of circuit interfaces
  TDRSS capability is verified through a demonstration using on-orbit NOAA and TDRS spacecraft to flow telemetry data to NOAA SOCC and to provide tracking data to the GSFC Flight Dynamics Facility (FDF). WSC transmits the data to GSFC for delivery to end-users. This is shown in Figure 2-4.

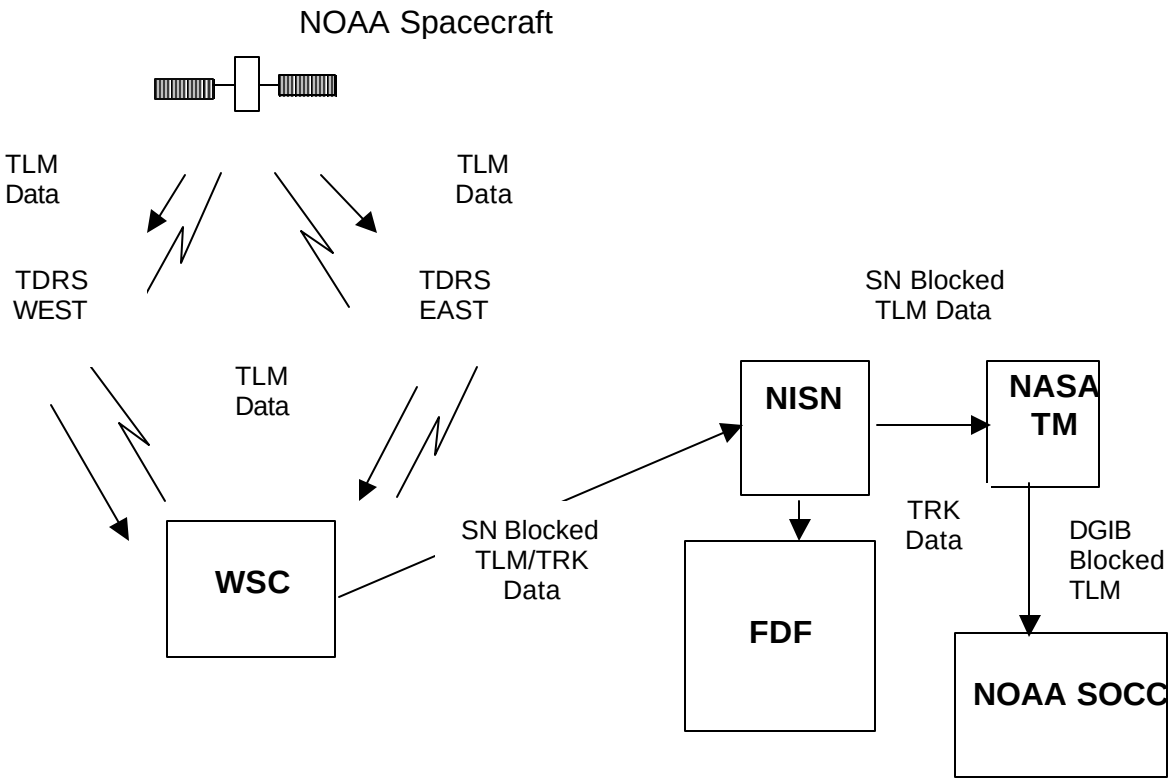

Figure 2-4 – NOAA Telemetry/Tracking Data Flow (TDRSS IVT)

2.1.1.6 KSC H-AE IVTs

The KSC H-AE IVTs are used to complete testing between the NOAA SOCC and the supporting stations at Malindi, Kenya (MAL) and AFSCN stations in Oakhanger, England (OTS) and Thule, Greenland (TTS).

Test Method

- Verification of circuit interfaces

Recorded NOAA-N or N' 16.64 kbps TIP ascent telemetry data will be relayed from AFSCN/OTS, AFSCN/TTS and MAL to NOAA SOCC via GSFC NISN. Telemetry will be processed and monitored at the NOAA SOCC for data quality. A flow diagram, Figure 2-4a, is provided below.

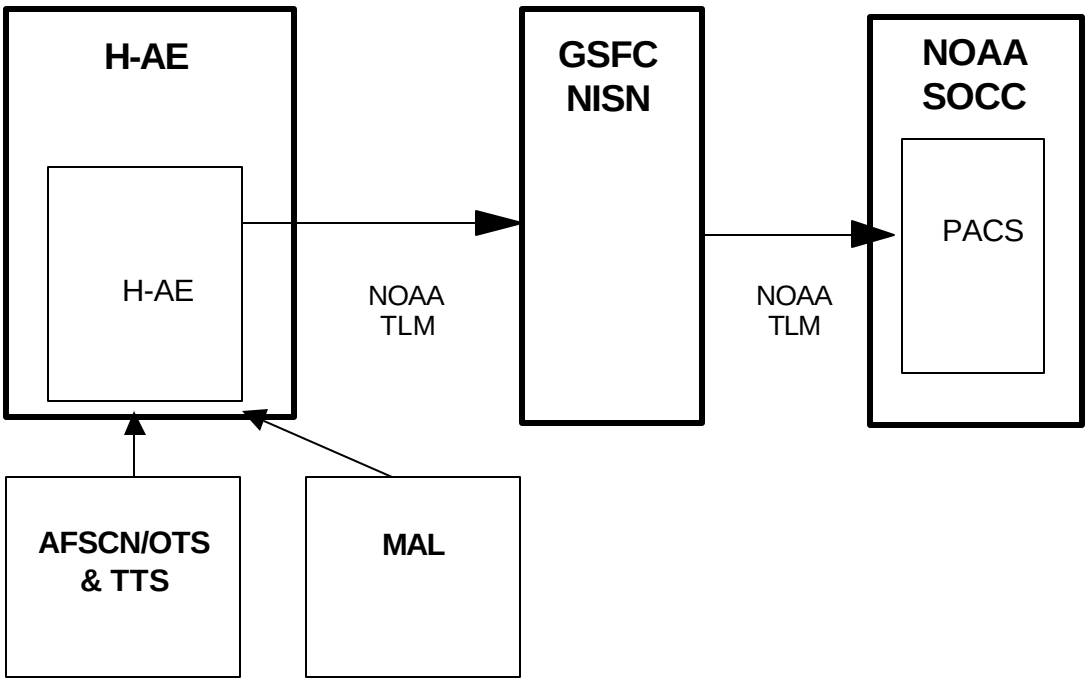

Figure 2-4a – Ascent Telemetry Data Flow (H-AE IVT)

The following spacecraft I&T and ground system development activities must be completed prior to execution of the H-AE interface testing:

- The NOAA-N or –N' telemetry database has been generated and is resident in the PACS ODB directory at both the NOAA SOCC and WCDA station.
- The NOAA-N or –N' TV SEPET has been completed. The CD-ROM has been converted to digital files, and transmitted to H-AE and all remote stations.

2.1.2 Ground System ETE Tests

The NOAA-N and –N' ETE tests exercise the ability of the NOAA SOCC ground system to send commands and receive and process telemetry from the spacecraft. ETE tests exercise the total flight and ground system capability in an operational scenario. These tests build on the system capabilities verified, and the lessons learned from the interface testing. ETE tests are the last step in verifying that the ground and spacecraft network is ready to support the NOAA-N and –N' missions. Two ETE tests each are currently planned for NOAA-N and NOAA-N'.

2.1.2.1 ETE Test Method

As with any ground system integration test involving flight hardware, all commands, Command Procedures (CPs), and test scripts to be utilized in ETE testing must be validated with the Test and Training Subsystem (TTS) prior to execution with the flight hardware.

2.1.2.2 Script Validation

Each ETE test script must be validated for proper commands, CPs, functionality, and ground system and spacecraft operational constraints. The command portion of the test script is executed in time order, step-by-step, against the TTS. Proper command and CP execution are verified, and the ground system's ability to generate products [such as central processing unit (CPU) loads, ephemeris loads, flight time table] and process telemetry and spacecraft CPU dumps is validated. All anomalies involving the test script, ground system, and spacecraft simulator/TTS are addressed prior to proceeding to the next phase.

2.1.2.3 ETE Script 'Dry Run'

After the script has been validated, and all ground system and spacecraft requirements for test support have been verified, the ETE test script is executed against the TIROS Dynamic Flight Simulator (TDFS) at the LMSSC facilities. All supporting ground elements [SOCC Launch Control Room (LCR), CDA stations, LMSSC, and GSFC] are utilized for the ETE script dry run. The ETE script dry run validates SOCC ground system configuration procedures, LMSSC spacecraft configuration procedures, resource requirements, software support requirements, and voice and data communication links among the supporting elements. The ETE dry run also provides test support personnel with familiarization training for voice protocol, PACS workstation operation, NOAA SOCC standard operating procedures, and test roles and responsibilities.

2.1.2.4 ETE Test

After the test script has been validated against the TTS (section 2.1.2.2) and by an ETE dry run (section 2.1.2.3), the script is executed against the spacecraft. LMSSC personnel configure the spacecraft for testing prior to test execution. The NASA/NOAA test team configures the NOAA SOCC ground system for the test. Upon completion and verification of the pre-test configuration activities, commands are transmitted from the NOAA SOCC to the NOAA-N or –N' spacecraft. Systems engineers monitor telemetry to verify proper command execution. ETE test objectives include:

- Verify the ability of the total ground system (SOCC, CDA, GSFC, NISN) to support command, telemetry, and communication requirements for the NOAA-N or –N' mission.
- Verify the ability of the NOAA SOCC PACS ground system to generate and uplink NOAA-N or –N' CPU loads.
- Verify the ability of the NOAA SOCC PACS ground system to generate and uplink NOAA-N or –N' ephemeris loads.
- Verify the ability of the NOAA SOCC PACS ground system to capture and process a NOAA-N or –N' CPU load dump.
- Verify the ability of the NOAA SOCC PACS ground system to generate and transmit NOAA-N or –N' commands.

- Verify the ability of the NOAA SOCC PACS ground system to generate and transmit valid NOAA-N or –N' CPs.
- Verify the ability of the NOAA SOCC PACS ground system to capture and process valid NOAA-N or –N' telemetry.

A unique set of test objectives is defined for each ETE test. These objectives are addressed in the test procedures developed for each ETE test For NOAA-N and N', these objectives will include interacting with the new Microwave Humidity Sounder (MHS) instrument and the MHS Interface Unit.

A detailed flow diagram, unique for each ETE test, is included in the ETE test procedures. The diagram in Figure 2-5 shows the generic ETE test flow.

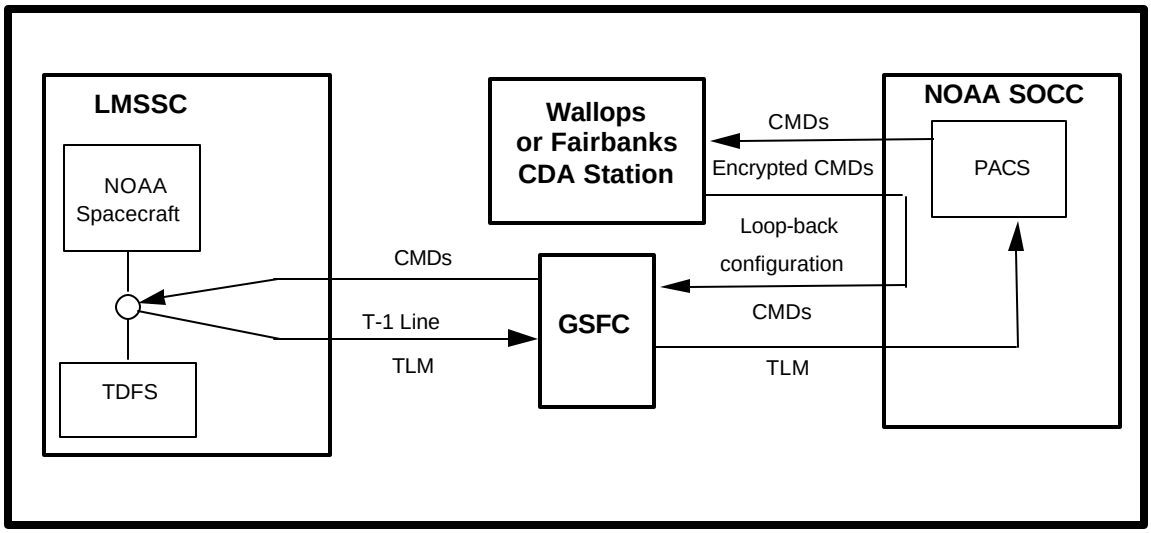

Figure 2-5 - Generic ETE Test Flow

Prior to ETE testing, the NOAA-N or –N' PACS database must be generated and resident in the PACS ODB directory at the NOAA SOCC.

2.1.3 Proficiency Demonstration Exercises

Upon completion of the interface testing discussed in section 2.1.1, proficiency exercises are utilized for crew training. These exercises provide a means of training ground element (DSN H-AE (Malindi) and AFSCN) support personnel in the use of standard NOAA support procedures in order to improve operational skills.

The activities performed during proficiency exercises are based on the data flow tests from previous interface testing. However, an on-orbit NOAA spacecraft is used for the command destination and telemetry source.
The test method described below is repeated to provide a training opportunity for all crews at each site.

Test Method

The method is to schedule an on-orbit NOAA spacecraft pass. Telemetry from the spacecraft is received by a DSN station and flows via JPL to PACS, or an AFSCN station via the AFSCN Mission Control Center, or via H-AE. In addition, commands are transmitted from the SOCC via JPL through the DSN station to the on-orbit spacecraft. The process is shown in Figure 2-6.

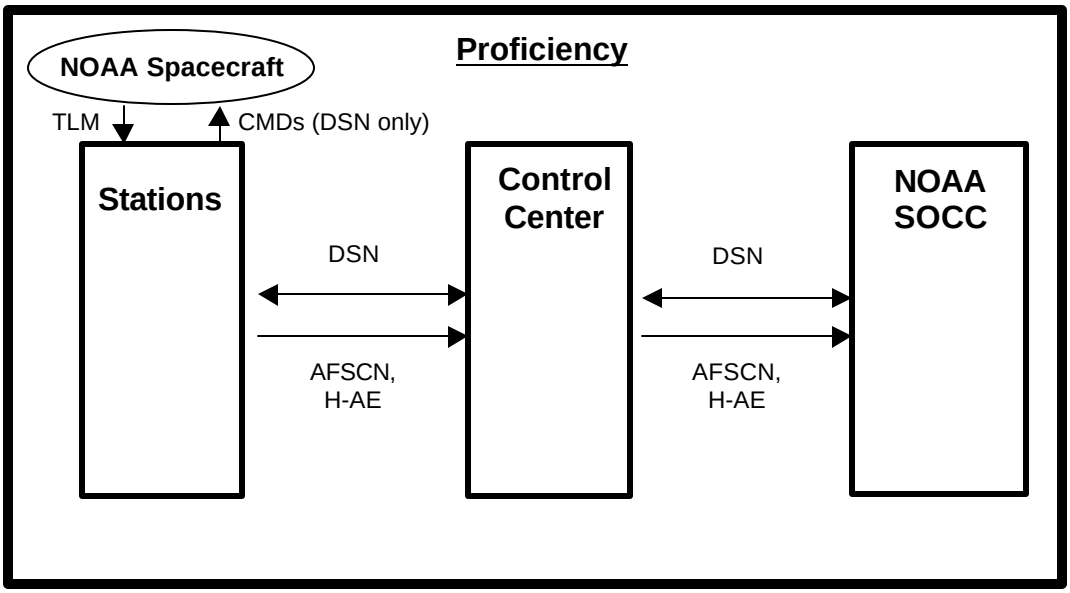

Figure 2-6 - Generic Proficiency Demonstration Exercise Flow

2.2 Test Documentation

This section defines the documentation required for each test. All tests which are planned to be executed as part of the POES Mission Operations Readiness effort follow specific documentation standards as defined in sections 2.2.1, 2.2.2, and 2.2.3.

2.2.1 Test Plans

Test plans are required for every test performed on the POES Project. Each test plan sets forth requirements to be verified and specifies the prerequisites and resources required for test execution. The test plan identifies participating organizations and their roles and responsibilities associated with a specific test. Each test plan provides a high level schedule of activities associated with that test. Test plans are prepared by the Test Director (TD) and Test Conductor (TC).

Draft test plans must be issued to all participating organizations at least three weeks prior to the planned test execution date. Each organization has one week to review the test plan and provide comments to

the TD. The final test plan must be issued to all participating organizations one week prior to test execution.

2.2.2 Test Procedures

- Test procedures are required for every test performed on the POES Project. They are issued by the TD and TC.

Test procedures adhere to the guidelines defined in Section 2.2.1. IVT procedures are included as Section 9 of the IVT plans.

2.2.3 Test Reports

A test report is generated for every mission readiness test performed on the POES Project. The test reporting process is divided into two phases:

- A summary test report is written for quick turnaround of test results for every mission readiness test that is performed.
- A final test and data analysis report is written for detailed results of test activities after each mission readiness test series is completed.

2.2.3.1 Summary Test Reports

The summary test report provides quick, concise feedback to the POES Project regarding test results. The summary test report is generated by the TD and TC and is issued to all participants within five days of test completion. Comments on this report are directed to the TD for incorporation into the final test and data analysis report.

2.2.3.2 Final Test and Data Analysis Reports

The final test and data analysis report provides a high-level review of the overall test activities and the detailed results of the data analysis. The TD and TC prepare this report, with support from all participating organizations. Comments from the summary test reports are incorporated.

2.3 Key Personnel

This section identifies and defines the roles of key personnel required for mission readiness tests. Specific roles and responsibilities for each mission readiness test are provided in the test documentation.

2.3.1 TD

A TD is designated for each POES mission readiness test. The TD has primary responsibility for the development, execution, post-test analysis, reporting, and data archival for the test. The TD is responsible for directing the test team activities at the ATNAGE facilities and at the NOAA SOCC. The TD interfaces directly with the TC at the SOCC. The TD has the following responsibilities:

- Develop the test plan and procedures
- Provide direction for all pre-test and post-test reviews and briefings
- Maintain the test activities schedule
- Develop and distribute the NISN briefing message 72 hours prior to test start
- Provide direction for test support activities including scheduling, personnel, and facilities support issues
- Provide direction for ground system anomaly investigations
- Review and maintain NOAA-K, L, M, N, N' Test Problem Reports (NTPRs)
- Coordinate data analysis activities
- Develop the summary test report
- Coordinate development of the final test and data analysis report.

2.3.2 TC

The TC provides system engineering support at the SOCC. The TC is responsible for monitoring and verifying telemetry at the SOCC, for proper command and procedure execution, and for database validation and certification. The TC provides the following support for mission readiness testing:

- Assist in the development of the test plan and procedures
- Assist in test script validation
- Assist in the development and distribution of the NISN briefing message 72 hours prior to test start
- Review and verify all commands and CPs before they are sent
- Maintain the test log book
- Ensure that all test data is archived
- Assist in data analysis activities
- Assist in the development of the summary test report
- Assist in the development of the final test and data analysis report.

2.3.3 Flight Controller

The NOAA SOCC flight controllers provide real-time ground configuration support for the test. The flight controllers are responsible for configuration and verification of ground equipment including voice and data lines and PACS equipment. They provide the following support:

- Assist in test script validation
- Execute the system configuration and set-up script
- Execute the test script
- Execute the post-test script
- Assist in ground system anomaly investigations
- Assist in the development of the summary test report
- Assist in the development of the final test and data analysis report
- Assist in test data archival.

2.3.4 Test Engineer

The Test Engineer provides systems engineering support during POES testing and is responsible for the following:

- Assist in the development of the test plan and procedures
- Assist in test script validation
- Validate the NOAA-N or –N' commands and CPs executed in this test and achieve Level III certification in concert with off-line support from the GSFC subsystem and/or instrument engineer
- Monitor the test activity on PACS at the SOCC and maintain communication with the SOCC TC. During appropriate tests, snap the relevant subsystem or instrument cathode ray tube pages
- Assist in ground system anomaly investigations
- Document test anomalies on NTPR forms
- Ensure that all test data is archived
- Assist in the development of the summary test report
- Assist in the development of the final test and data analysis report.

2.4 Test Reviews and Briefings

Test reviews and briefings are required for all mission readiness tests. The following reviews and briefings are required for POES mission readiness tests:

- TRR (for ETE tests)

- Pre-test set-up briefing (on-net)
- Pre-test briefing (on-net)
- Post-test debriefing

These reviews and briefings are designed to inform all participants of the overall readiness to support the test, new developments in the test plans or processes, and preliminary test results.

2.5 NISN Briefing Message

A NISN briefing message must be distributed at least 72 hours prior to the scheduled test execution date. The NISN briefing message contains the following information necessary for NISN and supporting entities to configure for support:

- Test title
- Test purpose
- Schedule
- Test objectives
- Applicable documentation
- Test participants – organizations
- Test configurations
- Test procedure
- Telemetry data information
- Communication requirements
- Points of contact – key personnel names, positions, and telephone numbers

2.6 Test Data Archive

Test data are archived in the NASA POES library for future reference. Test data include final test procedures, "as run" test scripts, test anomaly reports, summary test reports, and final test and data analysis reports.

Section 3 - Requirements Verification and Tracking

Mission support requirements are defined in the *System Mission Operations Requirements Document.*

Section 4 - Anomaly Reporting and Tracking

NTPRs are generated for all anomalies experienced during testing. The test team reviews the NTPRs and actions are assigned. NTPRs are compiled into a database. The test team keeps track of their status.

Appendix A - Acronyms

AFB	Air Force Base
AFSCN	Air Force Satellite Control Network
ATNAGE	Advanced TIROS-N Aerospace Ground Equipment
CDA	Command and Data Acquisition
CD-ROM	Compact Disk-Read Only Memory
CP	Command Procedure
CPU	Central Processing Unit
DMR	Detailed Mission Requirements
DSN	Deep Space Network
ETE	End-to-End
FDF	Flight Dynamics Facility
FOM	Flight Operations Manager
GSFC	Goddard Space Flight Center
H-AE	Hangar-AE
I&T	Integration and Test
IVT	Interface Verification Test
JPL	Jet Propulsion Laboratory
KSC	Kennedy Space Center
LCR	Launch Control Room
LMSSC	Lockheed Martin Space Systems Company
MAL	Malindi, Kenya
MCM	McMurdo Sound
MHS	Microwave Humidity Sounder
MOWG	Mission Operations Working Group
NASA	National Aeronautics and Space Administration
NESDIS	National Environmental Satellite, Data, and Information Service
NISN	NASA Integrated Systems Network
NOAA	National Oceanic and Atmospheric Administration
NSF	National Science Foundation
NTPR	NOAA-K, L, M, N, N' Test Problem Report
ODB	Operational Database
OTS	Oakhanger, England
OV	On-orbit Verification
PACS	Polar Acquisition and Control System
POES	Polar Operational Environmental Satellites
RTS	Remote Tracking Station
SEPET	System Electrical Performance Evaluation Test
SN	Space Network

SOCC	Satellite Operations Control Center
TC	Test Conductor
TD	Test Director
TDFS	TIROS Dynamic Flight Simulator
TDRSS	Tracking and Data Relay Satellite System
TIP	TIROS Information Processor
TIROS	Television Infrared Observation Satellite
TRR	Test Readiness Review
TTS	Test and Training Subsystem
TTS	Thule, Greenland
TV	Thermal Vacuum
VAFB	Vandenberg Air Force Base
WCDA	Wallops CDA
WR	Western Range
WSC	White Sands Complex